AMENDMENTS TO THE CLAIMS

Claims 1-5. (Canceled)

Claim 6. (Previously Presented)   A communication system comprising:

a plurality of communication devices being connected to a transmission line and divided

into one master communication device and other slave communication devices to logically form

a star-type connection and adjusting transmission timing of data based on a detection result of a

carrier signal of another communication device to prevent a collision between signals, thereby

performing transmission or reception of the data via the master communication device,

wherein the data includes first multi-address data to be relayed, ACK data representing a

reception confirmation of the first multi-address data, second multi-address data for relaying the

first multi-address data, third multi-address data for relaying the first multi-address data, and

general data, the master communication device includes a transmission control unit configured to

transmit the general data at a random time determined by random numbers set after elapse of a

first time and before elapse of a second time from a time when the carrier signal on the

transmission line is gone, when newly transmitting the data, and to transmit the ACK data to the

transmission line before elapse of the first time from a time when the master communication

device confirms reception of the first multi-address data and, when the first multi-address data is

received, to transmit the second multi-address data to the transmission line before elapse of the

first time from a time when a carrier signal of the ACK data is gone, and to subsequently

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transmit the third multi-address data before elapse of the first time from a time when a carrier

signal of the second multi-address data is gone.

Claim 7. (Previously Presented)   A communication system comprising:

a plurality of communication devices being connected to a transmission line and divided

into one master communication device and other slave communication devices to logically form

a star-type connection and adjusting transmission timing of data based on a detection result of a

carrier signal of another communication device to prevent a collision between signals, thereby

performing transmission or reception of the data via the master communication device,

wherein the data includes first multi-address data to be relayed, collision avoidance data

that is arbitrary data for generating a carrier signal on the transmission line, second multi-address

data for relaying the first multi-address data, third multi-address data for relaying the first multi-

address data and general data, each of the plurality of communication devices includes a

transmission control unit configured to transmit the general data at a random time determined by

random numbers set after elapse of a first time and before elapse of a second time from a time

when the carrier signal on the transmission line is gone, when newly transmitting the data, to

transmit the collision avoidance data at a random time determined by random numbers set after

elapse of the first time and before elapse of the second time from a time when the carrier signal

on the transmission line is gone, when transmitting the multi-address data, and to transmit the

multi-address data before elapse of the first time from a time when a carrier signal of the

collision avoidance data is gone, when the multi-address data is transmitted,

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wherein a transmission control unit of the master communication device, when receiving the first multi-address data, transmits the second multi-address data to the transmission line before elapse of the first time from a time when a carrier signal of the first multi-address data is gone, and subsequently transmit the third multi-address data before elapse of the first time.

Claims 8 –13. (Canceled)

Claim 14. (Previously Presented)   A communication method in which a plurality of communication devices are connected to a transmission line and divided into one master communication device and other slave communication devices to logically form a star-type connection and adjust transmission timing of data based on a detection result of a carrier signal of another communication device to prevent a collision between signals, thereby performing transmission or reception of the data via the master communication device, wherein the data includes first data whose transmission is requested and ACK data representing a reception confirmation of the first data, the communication method comprising:

a data transmission step of transmitting the first data to the master communication device at a random time determined by random numbers set after elapse of a first time and before elapse of a second time from a time when the carrier signal on the transmission line is gone in a case where a slave communication device of a transmission source transmits the first data by request;

a data relay step in which the master communication device that has received the first data transmits the first data to a slave communication device of a transmission destination before

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elapse of the first time from a time when a carrier signal of the first data on the transmission line is gone;

an ACK transmission step in which the slave communication device of the transmission destination transmits ACK data representing a reception confirmation to the master communication device after the reception of the data is confirmed before elapse of the first time; and

an ACK relay transmission step in which the master communication device that has received the ACK data transmits the ACK data to the slave communication device of the transmission source before elapse of the first time from a time when a carrier signal of the ACK data on the transmission line is gone.

Claim 15. (Previously Presented) A communication method in which a plurality of communication devices are connected to a transmission line and divided into one master communication device and other slave communication devices to logically form a star-type connection and adjust transmission timing of data based on a detection result of a carrier signal of another communication device to prevent a collision between signals, thereby performing transmission or reception of the data via the master communication device, wherein the data includes first data whose transmission is requested and ACK data representing a reception confirmation of the first data, the communication method comprising:

a data transmission step of transmitting the first data to the master communication device at a random time determined by random numbers set after elapse of a first time and before elapse

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of a second time from a time when the carrier signal on the transmission line is gone in a case where a slave communication device of a transmission source transmits the first data by request;

an ACK transmission step in which the master communication device that has received the first data transmits the ACK data representing a reception confirmation to the slave communication device of the transmission source after the reception of the first data is confirmed before elapse of the first time; and

a data relay transmission step in which the master communication device transmits the first data to a slave communication device of a transmission destination after the transmission of the ACK data before elapse of the first time from a time when a carrier signal of the ACK data is gone.

Claim 16. (Previously Presented) A communication method in which a plurality of communication devices are connected to a transmission line and divided into one master communication device and other slave communication devices to logically form a star-type connection and adjust transmission timing of data based on a detection result of a carrier signal of another communication device to prevent a collision between signals, thereby performing transmission or reception of the data via the master communication device, wherein the data includes multi-address data whose transmission is requested and ACK data representing a reception confirmation of the multi-address data, the communication method comprising:

a multi-address data transmission step of transmitting the multi-address data to the master communication device at a random time determined by random numbers set after elapse of a first

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time and before elapse of a second time from a time when the carrier signal on the transmission line is gone in a case where a slave communication device of a transmission source transmits the multi-address data by request;

an ACK transmission step in which the master communication device that has received the multi-address data transmits the ACK data representing a reception confirmation to the slave communication device of the transmission source after the reception of the multi-address data is confirmed before elapse of the first time; and

a multi-address data relay transmission step of processing a series of data transmissions in which the master communication device transmits the multi-address data to a slave communication device of a transmission destination after the transmission of the ACK data before elapse of the first time from a time when a carrier signal of the ACK data is gone and transmits the multi-address data to a slave communication device of a transmission destination before elapse of the first time from a time when a carrier signal of the multi-address data is gone.

Claim 17. (Previously Presented)   A communication method in which a plurality of communication devices are connected to a transmission line and divided into one master communication device and other slave communication devices to logically form a star-type connection and adjust transmission timing of data based on a detection result of a carrier signal of another communication device to prevent a collision between signals, thereby performing transmission or reception of the data via the master communication device, wherein the data includes collision avoidance data that is arbitrary data generating a carrier signal on the

transmission line and multi-address data whose transmission is requested, the communication method comprising:

a collision avoidance data transmission step of transmitting the collision avoidance data at a random time determined by random numbers set after elapse of a first time and before elapse of a second time from a time when the carrier signal on the transmission line is gone in a case where a slave communication device of a transmission source transmits the multi-address data by request;

a multi-address data relay transmission step in which the slave communication device of the transmission source transmits the multi-address data to the master communication device before elapse of the first time from a time when a carrier signal of the collision avoidance data is gone; and

an multi-address data relay transmission step of processing a series of data transmissions in which the master communication device that has received the multi-address data transmits the multi-address data to a slave communication device of a transmission destination before elapse of the first time from a time when a carrier signal of the multi-address data is gone and transmits the multi-address data to a slave communication device of a transmission destination before elapse of the first time from a time when the carrier signal of the multi-address data is gone.

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